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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/663,038	09/15/2000	Edward Christian Jelks	41992-00220	3377

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EXAMINER	
PAYNE, DAVID C	

ART UNIT	PAPER NUMBER
2633	7

DATE MAILED: 07/12/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/663,038	JELKS, EDWARD CHRISTIAN	
	Examiner	Art Unit	
	David C. Payne	2633	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *22 April 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-26* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *23* is/are allowed.

6)☒ Claim(s) *1, 3-8, 11-14, 16-21, and 24-26* is/are rejected.

7)☒ Claim(s) *2,9,10,15 and 22* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *22 April 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments with respect to claims 1-26 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1, 3-8, 11-14, 16-21, and 24-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki et al. US 5,754,714 (Suzuki) in view of Hofmeister US 6,091,864 (Hofmeister) and Heflinger et al. US 6,396,605 B1 (Heflinger).

Regarding claims 1, 8, 14, 18, 26 Suzuki disclosed

A high efficiency optical feedback modulator operable to produce a high modulation depth optical signal, comprising:

an optical modulator (figure 7) having a first (signal light) and a second optical input (control light) and a first and a second optical output (13 or 14); wherein the first optical input is operable to receive an input light beam.

Suzuki does not disclose an optical feedback system coupling the second

optical output to the second optical input and operable to communicate an optical feedback signal from the second optical output to the second optical input (control light);

Suzuki does not disclose that the optical modulator operates to modulate the input light beam and the optical feedback signal in response to an electrical signal to optical signal from the first optical output.

Hofmeister disclosed (Figure 4) an optical modulator with an electrical input (RF1). It would have been obvious to one of ordinary skill in the art at the time of invention to modulate the Suzuki modulator with the external (RF1) signal in order to imprint an analog data signal such as a CATV signal (see col./line(s): 4/15-25). Furthermore, no patentable weight has been given to the limitation of "the high modulation depth" since it does not pose any substantive differences over the prior art.

Heflinger disclosed a modulator (Figure 1) with feedback (16 of Figure 1). It would have been obvious to one of ordinary skill in the art at the time of invention to use the Heflinger feedback in the Suzuki invention so as to tune the optical interferometer without introducing dither to the optical path length of the leg of the optical interferometer (see Heflinger col. 2 lines 45-60).

Regarding claim 3, Suzuki disclosed an optical waveguide (Figure 7).

Regarding claims 4, 17, 19 the modified invention of Suzuki, Hofmeister and Heflinger disclosed an analog signal (CATV, see col./line(s): 4/15-25).

Regarding claim 16, Suzuki disclosed a Mach Zehnder two-by-two optical modulator (Figure 7).

Regarding claims 5, 11, and 25 Suzuki disclosed couplers (Figure 7, #1 and #2) but not 3db couplers. However, it would have been obvious to one of ordinary skill in the art at the time of invention to use 3db couplers so the an equal amount of energy would be split be each branch yielding a 50:50 power split and equally mixing the input optical signals as is well known in the art.

Regarding claims 6, 12 the modified invention of Suzuki, Hofmeister and Heflinger disclosed a first and second phase modulator (Hofmeister, figure 5, #102, and #116).

Regarding claims 7, 13, 20 the modified invention of Suzuki, Hofmeister and Heflinger disclosed the use of repeaters (Hofmeister, e.g., col./line: 4/20-27).

Regarding claim 21, Suzuki disclosed, (figure 7)
a method of communicating an input light beam to a first optical input (signal light) of an optical modulator;
Suzuki does not disclose intensity modulating at least one of the optical signals with an electronic input signal to produce a first and a second phase shift optical signal; and coupling the phase shift optical signals to produce an

optical feedback signal.

Suzuki does not disclose that the optical modulator operates to modulate the input light beam and the optical feedback signal in response to an electrical signal to optical signal from the first optical output.

Hofmeister disclosed (Figure 5) an optical modulator with an electrical input (RF1) controllable to shift the phase of the signals. It would have been obvious to one of ordinary skill in the art at the time of invention to modulate the Suzuki modulator with the external (RF1) signal in order to imprint an analog data signal such as a CATV signal (see col./line(s): 4/15-25).

Heflinger disclosed a modulator (Figure 1) with feedback (16 of Figure 1). It would have been obvious to one of ordinary skill in the art at the time of invention to use the Heflinger feedback in the Suzuki invention so as to tune the optical interferometer without introducing dither to the optical path length of the leg of the optical interferometer (see Heflinger col. 2 lines 45-60).

Regarding claims 2, 10, 15, and 22 the modified invention of Suzuki and Hofmeister does not disclose an amplifier in the feedback path. However, it would have been obvious to one of ordinary skill in the art at the time of invention to place an amplifier in the feedback path in order to amplify the output of the modulator as is well known in the art to do.

Regarding claim 24 Suzuki disclosed

A high efficiency optical feedback modulator operable to produce a high

modulation depth optical signal, comprising:

an Mach Zehnder two-by-two optical modulator (figure 7) having a two optical inputs (signal light, control light) and at least two optical outputs (13 or 14);

Suzuki does not disclose that the optical modulator operates to modulate the input light beam and the optical feedback signal in response to an electrical signal to optical signal from the first optical output, and an optical receiver.

Hofmeister disclosed (Figure 4) an optical modulator with an electrical input (RF1). It would have been obvious to one of ordinary skill in the art at the time of invention to modulate the Suzuki modulator with the external (RF1) signal in order to imprint an analog data signal such as a CATV signal (see col./line(s): 4/15-25). Furthermore, no patentable weight has been given to the limitation of "the high modulation depth" since it does not pose any substantive differences over the prior art.

Heflinger disclosed a modulator (Figure 1) with feedback (16 of Figure 1). It would have been obvious to one of ordinary skill in the art at the time of invention to use the Heflinger feedback in the Suzuki invention so as to tune the optical interferometer without introducing dither to the optical path length of the leg of the optical interferometer (see Heflinger col. 2 lines 45-60).

Allowable Subject Matter

4. Claims 2, 9, 10, 15 and 22 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

5. Claim 23 is allowed.

Conclusion

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to David C. Payne whose telephone number is (703) 306-0004. The examiner can normally be reached on M-F, 7a-4p.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on (703) 305-4729. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9314.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.

Dcp

DCPayne, Patent Examiner
AU 2633